



# Missouri Department of Natural Resources

Water Protection And Soil Conservation Division  
Public Drinking Water Program

## MODEL

Emergency Operating Plan  
For Public Water Supplies

## Who Does What?

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PUBLIC WATER SYSTEM  
MODEL EMERGENCY OPERATING PLAN

**WHO DOES WHAT?**

This section describes who does what in an emergency. In addition, general emergency tasks are discussed.

**BEFORE AN EMERGENCY (VULNERABILITY ASSESSMENT)**

Before an emergency, decide what each person will do. Think about people who are not on staff but could help, such as a mayor, councilperson, or volunteers. The form on the next page suggests how to group emergency duties and has blanks for names and phone numbers.

Suggestions for who should do each group of emergency duties:

- X Emergency Manager: superintendent, owner, general manager. Someone who can spend money for the utility.
- X Assistant Emergency Manager: shift foreman, engineer, assistant general manager.
- X Communications Manager: could be the same person as the Emergency Manager or Assistant Emergency Manager, but should be a different person, if possible. The mayor or a councilperson could do this.
- X Damage Assessment/Repair Team Leaders: superintendent (if not Emergency Manager) or shift foreman.

Other utility employees, with phone numbers and reporting locations, can be listed in the next table or use a list you already have.

Before an emergency happens, everyone should know what they will do and where they will go in an emergency. Many times, phones are out in an emergency and you will not be able to call and tell people what to do.

If you are a small utility with only a few employees, ask for volunteers to help in emergencies. Choose volunteers with mechanical know-how and/or construction experience. The volunteers should not have other emergency duties, such as police or fire. Train the volunteers every six months in:

- X location of all facilities (i.e., wells, tanks, valve locations)
- X how each facility works
- X how to use radios
- X where supplies are stored
- X how the system works in normal operations
- X safety (particularly chlorine and other chemicals and confined spaces).

List the volunteers on the page after employees. For security purposes, all volunteers should undergo the same background checks as regular employees.

### WHO DOES WHAT?

Title	Emergency Duties	Person (give name and normal position)	Phone Numbers (list all phone numbers such as home, office, fax, pager, cellular)
Emergency Manager	Directs emergency work Directs getting emergency parts and supplies Sets repair priorities Sets customer priorities		
Assistant Emergency Manager	Does work of Emergency Manager if needed Helps Emergency Manager as needed		
Communications Manager	Talks to MDNR and other agencies Talks to reporters Gets radios and phones as needed Gets food and water for emergency crews		
Damage Assessment/Repair Team Leaders			
Water Supply	Evaluates damage to wells or intakes Evaluates damage to raw water pipeline(s) Directs and does repairs as told to by Emergency Manager		
Water Treatment	Evaluates damage to treatment plant Evaluates damage to high service pumps Directs and does repairs as told to by Emergency Manager		
Distribution	Evaluates damage to mains in system Evaluates damage to water storage Evaluates damage to pump stations Directs and does repairs as told to by Emergency Manager		

### OTHER EMPLOYEES

Employee	Position Under Normal Operations	Home Phone Number	Other Phone Numbers	Reporting Location	Emergency Duty

## VOLUNTEERS

Volunteer	Occupation	Home Phone Number	Other Phone Numbers	Reporting Location	Emergency Duty

The following questions will help you think about and prepare for an emergency.

### **People**

Do you have a program to practice responding to an emergency to benefit both existing and new employees? \_\_\_\_\_

Who cannot get to work if the roads are damaged, flooded or not accessible due to downed power lines or debris? \_\_\_\_\_

How will these people get to work (police or fire pick up, other employees pick up, volunteers?) \_\_\_\_\_

Are any of the people who will have problems getting to work in critical positions? Who? \_\_\_\_\_

Do you have a list of training completed by employees and their emergency capabilities? \_\_\_\_\_

Can someone else do the emergency work, is someone cross-trained? Who? \_\_\_\_\_

Has police, fire department and public officials been involved in the emergency training exercises? \_\_\_\_\_

Do those in critical positions have mobile/cell phones or radios? \_\_\_\_\_

Who does not? \_\_\_\_\_

Who has families or other responsibilities that may keep them from working in an emergency? \_\_\_\_\_

General tasks include items that affect every part of the system such as communications, transportation, and supply of alternate water.

### **Communications**

Do you have lightening strike protection or a radio system with back-up power for replacement of telemetry by broken cables and downed telephone lines? \_\_\_\_\_

Do you have mobile phones or radios? \_\_\_\_\_

How will you get mobile phones or radios in an emergency? \_\_\_\_\_

Are your radios based on a land facility such as an antenna tower? \_\_\_\_\_

How will you communicate if the radios are not working? \_\_\_\_\_

Have you considered a two-way radio system as a back-up? \_\_\_\_\_

Who has amateur radios in your area and who have you talked to about helping in an emergency? \_\_\_\_\_

Who else have you talked to about helping with communications in an emergency (i.e., police, fire or mass media outlets)? \_\_\_\_\_

More information on communications is in Appendix F.

## **Cyber and SCADA**

Do you have SCADA isolated from all other network connections? \_\_\_\_\_

Are all SCADA/Internet and intranet protection protocols in place? \_\_\_\_\_

Are firewalls and intrusion-detection software installed and operational? \_\_\_\_\_

Do you require upgrade password-protection and regular password changes? \_\_\_\_\_

Are employees allowed access only to those resources needed to do their job functions? \_\_\_\_\_

Is control limited for remote terminals to on-site or main terminals only? \_\_\_\_\_

Do you keep the networking and operating system current? \_\_\_\_\_

Is a data log installed to track all activity on a SCADA system? \_\_\_\_\_

Are SCADA system sensors operational and tested? \_\_\_\_\_

Is a response plan in place to deal with security breach? \_\_\_\_\_

Are you subscribed to ISAC to learn about threats, warnings and prevent damage to your water system? \_\_\_\_\_

## **Transportation**

What kind of transportation equipment do you have? Include construction equipment, 4-wheel drive vehicles, boats, etc. \_\_\_\_\_

What kind of transportation equipment will you need? \_\_\_\_\_

Where can you get the transportation equipment you might need but do not have? \_\_\_\_\_

Where is transportation equipment stored? (More than one place is better) \_\_\_\_\_

Do you have supplies, parts and fuel? \_\_\_\_\_

Are transportation equipment regularly maintained? \_\_\_\_\_

More information on transportation is in Appendix G.

## **Alternative Supplies**

Do you have mutual agreements with other water utilities for the emergency supply or raw and finished water? \_\_\_\_\_

Who do you have an interconnect with? \_\_\_\_\_

Who has tank trucks that could be used in an emergency? \_\_\_\_\_

Who can you get water from in an emergency? \_\_\_\_\_

Who can you call about supplying bottled water? \_\_\_\_\_

More information on alternative water supplies is in Appendix H.

### **Customers**

A priority list of customers is needed. There is a form on page WDW-8. Who will call these customers when there is a problem? \_\_\_\_\_

A list of wholesale customers (other water suppliers) is needed. There is a form on page WDW-9. Who will call these customers when there is a problem? \_\_\_\_\_

A list of industrial customers is needed. Use the bottom half of the form on page WDW-9. How long can these customers be without water? Who will call these customers when there is a problem? \_\_\_\_\_

How will you contact customers if there is a problem? \_\_\_\_\_

Who will contact other city services, such as police, fire and city hall? \_\_\_\_\_

\_\_\_\_\_

**PRIORITY CUSTOMERS**

(List hospitals, clinics, nursing homes, schools, daycare, etc.)

PWS Name: \_\_\_\_\_

This list was updated on \_\_\_\_\_ By \_\_\_\_\_

Customer	Address	Contact	Phone No.(s)	Type of Business

### **LARGE CUSTOMERS**

(List electric, gas, telephone utilities or wholesale customers, and industrial customers, etc.)

PWS Name: \_\_\_\_\_

This list updated on \_\_\_\_\_ By \_\_\_\_\_

Customer	Service Address	Contact	Phone No.(s)	Type of Business

## Security

Do new employees require a thorough background check? \_\_\_\_\_

Are period background checks conducted for existing employees? \_\_\_\_\_

Are all employees required to wear photo identification? \_\_\_\_\_

Have all keys and badges been collected from former employees? \_\_\_\_\_

Have security policies been developed, trained and practiced with employees? \_\_\_\_\_

Are employees trained to question strangers at all facilities and escort them if they are not to be there? \_\_\_\_\_

Do employees know to report unusual situations of others attempting to obtain facility information? \_\_\_\_\_

Are restricted areas posted with "Employees Only" or Restricted Area" signs? \_\_\_\_\_

Is access to plant facilities restricted by fence, locked gates, alarms or other physical barrier? \_\_\_\_\_

Are only authorized personnel given access keys or codes for locked facilities? \_\_\_\_\_

Who has keys to locked facilities? \_\_\_\_\_

Where are duplicate keys or codes located? \_\_\_\_\_

Are water system components monitored? \_\_\_\_\_

By utility staff / intrusion alarms / television monitors? \_\_\_\_\_

Does staff vary security checks on facilities to avoid predictable patterns? \_\_\_\_\_

If alarm is activated, what is the response plan? \_\_\_\_\_

Do local law enforcement personnel perform regular security checks? \_\_\_\_\_

Are local homeowners/landowners aware of need for security with telephone number(s) to call to report suspicious behavior? \_\_\_\_\_

Are procedures in-place when specific security threats are issued by local/national law enforcement authorities? \_\_\_\_\_

Is a contamination monitoring system available, operational and tested? \_\_\_\_\_

Is mail opened off-site? \_\_\_\_\_

Are visitors required to show identification and sign a log-in? \_\_\_\_\_

Is access to critical areas limited to visitors? \_\_\_\_\_

Are background checks conducted for contractors? \_\_\_\_\_

Is identification checked and verified for all chemical suppliers at delivery? \_\_\_\_\_

## Flood Protection

What rivers or streams might cause flooding problems? \_\_\_\_\_

What is the gage reading on this river at flood stage? \_\_\_\_\_

River gage information and a picture from the Corps of Engineers showing the right way to sandbag is in the *General Procedures for Specific Operations* under Flood.

List the gage reading, elevation above sea level at that gage reading, and the facilities affected:

Gage Reading	_____	Elevation	_____	Facilities affected	_____
Gage Reading	_____	Elevation	_____	Facilities affected	_____
Gage Reading	_____	Elevation	_____	Facilities affected	_____
Gage Reading	_____	Elevation	_____	Facilities affected	_____

## **Flood Protection**

Are structures designed and constructed according to local building codes and ordinances to mitigate damage caused by natural disasters? \_\_\_\_\_

Is reinforced masonry and other hazard-resistant construction used? \_\_\_\_\_

Are special connections used for roof and walls and foundation and walls to prevent structural damage? \_\_\_\_\_

What are current maintenance practices of each building? \_\_\_\_\_

Where are drawings and existing surveys of each structure kept? \_\_\_\_\_

What is the elevation of each structure, and what elevation would cause flooding of the structure? \_\_\_\_\_

\_\_\_\_\_

A survey establishing permanent horizontal and vertical control points on existing structures provides monitoring points for determining movement during and after flood and earthquake events. This information may be used to determine how and when to protect structures from unstable soil conditions.

## **Electrical Power**

Do you have an automatic shutdown feature to avoid voltage fluctuation that can cause damage to motors/electrical systems? \_\_\_\_\_

Are all underground cables of a type suitable for direct burial? \_\_\_\_\_

Have electrical cables been megger tested to detect low insulation resistance and potential breakdown in the insulation? \_\_\_\_\_

Which cables need repair or replacement? \_\_\_\_\_

When will these repairs and replacements happen? \_\_\_\_\_

Have medium-voltage cables (more than 600 volts) which are shielded been hi-pot tested to detect breakdowns in the insulation system? \_\_\_\_\_

Which cables need repair or replacement? \_\_\_\_\_

When will these repairs and replacements happen? \_\_\_\_\_

How will you construct temporary power distribution systems for equipment such as emergency floodlighting, portable pumps or other equipment? \_\_\_\_\_

If the main power supply goes out, what will you use for another power source? \_\_\_\_\_

Is there a priority service agreement for electric power established with the utility? \_\_\_\_\_

Are backup generators and batteries available in an emergency at all critical water components? \_\_\_\_\_

Is fuel available for generators and is the system exercised regularly? \_\_\_\_\_

**Insurance**

Do you have an insurance policy for damage to water supply components?

\_\_\_\_\_

Have you documented the condition of existing structures, facilities and equipment? \_\_\_\_\_

Where are these photos and other documentation kept? \_\_\_\_\_

**Emergency Supplies**

Do you have supplies on hand in a safe place? Supplies should include flashlights, portable radio, batteries, two-way radios, first aid kit, emergency food and water and an adjustable wrench for turning off gas or water, etc. \_\_\_\_\_

**Drought Emergency**

Has a long-term water supply plan been established with projection for population and water demand? \_\_\_\_\_

Has the supply capacity of existing water sources been determined as well as additional water needs for a planning period? \_\_\_\_\_

Is a drought management plan developed that can be used to reduce the risk of shortage and customer hardship by conserving and encouraging efficient water use. \_\_\_\_\_

Have programs been established to provide emergency or short-term drought relief with rate surcharges or penalties for excess water use, restrictions on lawn watering/car washing, cooperation incentives, fines for noncompliance and ordinances between agencies and departments? \_\_\_\_\_

Has a water conservation ordinance been prepared and approved to address both emergency and short-term drought relief and long-term water supply needs for the community? (See examples in *General Procedures for Specific Emergencies* under Drought) \_\_\_\_\_

Are raw and/or finished water sources identified for drought emergency use? Alternative sources may include rivers, reservoirs, quarries, private lakes and other entities. \_\_\_\_\_

Has an agreement for an emergency water supply connections with a neighboring water system been developed with interconnect in place? \_\_\_\_\_

Has an agreement been compiled for emergency potable water hauling? \_\_\_\_\_

Do you have disinfection procedures for potable tanker trucks? (See Appendix H) \_\_\_\_\_

See *General Procedures for Specific Emergencies* under Drought for more information on this topic.

## DURING THE EMERGENCY

If a disaster occurs, all employees (and volunteers) should know to report and where to go without being told. When travel is safe, employees (and volunteers) should go to their reporting location as soon as their families are safe.

Sometimes, there will be time to prepare for a disaster. If you have time to prepare, start emergency operations before the disaster. Use the phone tree on the next page to call employees and volunteers to have them start emergency work.

The Emergency Manager, Assistant Emergency Manager, Communications Manager, and the team leaders will need to meet every day or more often to talk about repair priorities, equipment and materials.

### All Employees:

- X **Be ready to evacuate** – concentrate on the protection of life and then property.
- X **Follow all standard safety procedures** - Use caution around damaged buildings, and electrical and mechanical systems to avoid injuries from structural collapse, electrical shock, fire or released gases/chemicals.
- X **Check for safety** - is the area safe to enter or structure intact? Have all safety measures been taken, such as trench boxes installed, air tested, or gas turned off? Do normal safety tasks in all repair work performed.
- X **Use telephone lines only for emergencies** – particularly important in a disaster to prevent the tie-up of telephone lines.
- X **Document damage caused by emergency** - photos are best but good written descriptions are also good. Keep disposable or digital cameras on hand. A camcorder can also be used to document damage. Take pictures and provide documentation if time permits.
- X **Document work performed** - written documentation of who worked on what for how long is needed for insurance and/or federal reimbursement. Written documentation on supplies and equipment used is also needed.

### Emergency Manager:

- X Organize and direct damage assessment teams
- X Prioritize customer service based on the list on page WDW-8
- X Prioritize repairs
- X Get needed parts and equipment
- X Get needed safety equipment (best to do this before an emergency occurs)
- X Make sure there is written documentation of damages and repairs.

### Assistant Emergency Manager:

- X Help emergency manager as needed
- X Help and direct communications manager
- X Help and direct damage assessment/repair team leaders.

**Communications Manager:**

- X Talk to MDNR Regional Office
- X Talk to the city government or utility owner
- X Get needed communications equipment (cellular phones and radios)
- X Take care of repairs to emergency communications equipment
- X Talk to customers (generally through reporters)
- X Coordinate volunteers
- X Get food and drinks to utility and volunteer workers.

**Damage Assessment/Repair Team Leaders**

- X Lead work of team members
- X Keep safe working conditions for team members
- X Do damage assessment reports and give to the Emergency Manager
- X Keep written documentation
- X Give information to the Emergency Manager as asked
- X Do repair work as asked by the Emergency Manager.

**Damage Assessment/Repair Team Members**

- X Do damage assessment as asked by the team leader
- X Do repair work as asked by the team leader
- X Keep safety first!

**Specialty Contractors**

Specialty contractors that might be needed are:

- X dewatering
- X diving
- X electrical
- X mechanical (pumps, generators, etc.)
- X piping
- X pressure grouting
- X structural steel
- X concrete
- X heavy earth-moving

**Security Threats**

- See *General Procedures for Specific Emergencies* under Security Threats for response measures of security threats.
- Call 911 to report any suspicious activity or threats.
- Call MDNR Regional Office to inform them of the situation and obtain advice or assistance.
- Coordinate alternative raw and finished water supply if necessary.
- Determine severity of the threat, monitor the situation and change operations accordingly.
- If a portion of the system is contaminated or damaged, consider isolating the affected system.
- Notify or alert customers if necessary.

## **AFTER THE EMERGENCY**

Emergency operations should be used until operations are normal. After things return to normal, evaluate how you and your employees did during the emergency. Make changes to this plan if some things did not work well or could be improved.

After the emergency, these tasks need to be done:

- X     perform repairs as needed.
- X     replace parts and supplies used in emergency repairs.
- X     organize and complete files on emergency work.
- X     thank all who helped - volunteers, neighboring utilities, and others.
- X     evaluate how you responded to the emergency and revise this plan as needed.
- X     plan for changes needed as shown by the emergency (i.e., move buildings out of floodplain, raise pumps and motors to higher elevations, reinforce structures to prevent damage, etc.).
- X     document damage that has occurred using written descriptions, photos and videotape.
- X     apply for financial assistance (see Appendix N).